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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/618,112

07/11/2003

Akira Miyake

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27123

7590

01/26/2005

MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,112

Applicant(s)

MIYAKE ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "1" has been used to designate both a source (Fig. 1) and detector (Fig. 2). Replacing "1" with - 7- in Figure 2 may overcome the objection. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-3, 8, and 10 are objected to because of the following informalities, which appear to be minor draft errors creating grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following suggestions may overcome their respective objections: (claim 1, lines 8-9, "diffraction lights; second detecting means"; inserting - and- before "second detecting means"), (claim 2, line 3, "zero th"; inserting a hyphen between "zero" and "th"), (claim 3, line 3, "light to projected";

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inserting - -be- - before “projected”), (claim 8, line 3, “soft x-rays and x-rays”; inserting a comma after “soft x-rays”), and (claim 10, line 4, “said curved-surface reflection mirror”; changing the dependency of claim 10 from claim 8 to claim 9).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Saitoh et al. (US Patent 5160848).

4. Regarding claim 1, Saitoh et al. discloses a device (Fig. 4A) comprising a diffraction grating (Abstract, lines 1-2) for diffracting incident light to resolve the light into a plurality of diffraction lights having different orders (col. 5, lines 60-61), first detecting means for measuring an intensity of light of a predetermined diffraction light of the plurality of diffraction lights (Fig. 4A, #38), and second detecting means for measuring an intensity of a diffraction light other than the diffraction light received by said first detecting means (Fig. 4A, #39), and being reflected by an object to be measured (Fig. 4A, #2).

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5. Regarding claim 2, Saitoh et al. further discloses wherein the diffraction light to be detected by said second detecting means is zero-th order diffraction light diffracted by said diffraction grating (col. 6, line 36).

6. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Niu et al. (US Patent Application Publication 2002/0033954).

7. Regarding claim 1, Niu et al. discloses a device (Fig. 11) comprising a diffraction grating for diffracting incident light to resolve the light into a plurality of diffraction lights having different orders (Fig. 11, #1045), first detecting means for measuring an intensity of light of a predetermined diffraction light of the plurality of diffraction lights (Fig. 11, #1070a), and second detecting means for measuring an intensity of a diffraction light other than the diffraction light received by said first detecting means (Fig. 11, #1070b), and being reflected by an object to be measured (Fig. 11, #1045).

8. Regarding claim 7, Niu et al. further discloses the diffraction grating as a plane diffraction grating of laminar type (Fig. 11, #1045).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 3, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. (US Patent 5578833) in view of Holler et al. (US Patent Application Publication 2002/0075996).

10. Regarding claim 1, Ohmi et al. discloses a device (Fig. 13) comprising a diffraction grating for diffracting light to resolve the light into a plurality of diffraction light have different orders (Fig. 13, #603 or #301) and a detecting means for measuring an intensity of a diffraction light (Fig. 13, #303) being reflected by an object to be measured (Fig. 13, #105 and 606).

However, Ohmi et al. does not disclose another detecting means for measuring an intensity of a predetermined diffraction light.

Holler et al. teaches another detecting means for measuring an intensity of a predetermined diffraction light (Fig. 1, #7, and paragraph 44, lines 4-8).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. with the detecting means of Holler et al., since one would be motivated to make such a modification to allow for quick determination of the spectrum (paragraph 60) as shown by Holler et al.

11. Regarding claim 3, Ohmi et al. further discloses a spectroscope (Fig. 13, #602-604) for making light to be projected into approximately monochromatic light (col. 3, line 27).

12. Regarding claim 8, Ohmi et al. as modified above suggests a device as recited above.

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Ohmi et al. further discloses ultraviolet light (col. 3, line 27).

However, Ohmi et al. does not specifically disclose EUV light.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. as modified above with EUV light, since where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In this case, EUV light is within the range of UV light. One would be motivated to make such a modification to prevent damage due to radiation (col. 4, lines 5-10) as shown by Ohmi et al.

13. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Holler et al. as applied to claim 1 above, and further in view of Tsuboi et al. (JP 11-264762).

14. Regarding claims 4 and 5, Ohmi et al. as modified above suggests a device as recited above.

However, Ohmi et al. does not disclose a condensing spherical mirror between a diffraction grating and detecting means.

Tsuboi et al. teaches a condensing spherical mirror (Fig. 1, #6) between a diffraction grating (Fig. 1, #3) and detecting means (Fig. 1, #7).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. as modified above with the mirror

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of Tsuboi et al., since one would be motivated to make such a modification to make the spectral image brighter and more uniform (Abstract) as shown by Tsuboi et al.

15. Regarding claim 6, Ohmi et al. as modified above suggests a device as recited above.

However, Ohmi et al. does not disclose wherein in a plane containing central axes of incident and reflected light upon and from the condensing mirror, the diffraction grating and detecting means are approximately conjugate with each other with respect to the condensing mirror.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. as modified above with the diffraction grating and detecting means approximately conjugate with each other with respect to the condensing mirror, since rearranging parts of an invention only involves routine skill in the art. One would be motivated to make such a modification to make the device more compact.

16. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Holler et al. as applied to claim 3 above, and further in view of Nakamura (JP 63-058127).

17. Regarding claim 9, Ohmi et al. as modified above suggests a device as recited above.

However, Ohmi et al. does not disclose a curved-surface reflection mirror between the spectroscope and diffraction grating, which would put the mirror after the exit pupil of the spectroscope.

Nakamura teaches a curved-surface reflection mirror (Fig. 1, #28) after the exit pupil (Fig. 1, #26) of the spectroscope (Fig. 1, #14).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. as modified above with the mirror of Nakamura, which would put the mirror between the spectroscope and diffraction grating, since one would be motivated to make such a modification to make the device more compact (Fig. 1) as implied from Nakamura.

18. Regarding claim 10, Ohmi et al. as modified above suggests a device as recited above.

However, Ohmi et al. does not disclose wherein in a plane containing central axes of incident and reflected light upon and from the curved-surface reflection mirror, an exit pupil of the spectroscope and diffraction grating are approximately conjugate with each other with respect to the reflection mirror.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Ohmi et al. as modified above with the exit pupil and diffraction grating approximately conjugate with each other with respect to the reflection mirror, since rearranging parts of an invention only involves routine skill in the art. One would be motivated to make such a modification to make the device more compact.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER